Frankly Speaking

"America Digs In"

WHEN America decided to dig in, her first demand was for cantonments, large factory capacities, airports and air and naval repair bases. Without these fundamental things, she could not train her men, build their weapons, or carry on her plans for defense. In order to accomplish these aims, an emergency call for transportation of the most efficient nature was sent out over the nation. A moving job, this was the all important preliminary work for the defense of the country. It was then that American highways and the highway and traffic engineers came into their own.

During the first World War, transportation of soldiers, equipment, machines and supplies were made largely by rail. Since there were no connected hard-surfaced highways and motor transportation was still in its infancy, motor trucks were used mostly for transferring supplies and ammunition for relatively short distances, principally between points of delivery by rail and the points of use or consumption.

Today, with a large number of hard-surfaced roads, and with up-to-date motor equipment, the problems of transportation have shifted largely from railroads to the highways. Since the army has been mechanized and equipped with motor vehicles, whole armies are transported by trucks rather than by railways.

The job has become so great, that the War Department has seen fit to set up a National Highway Traffic Advisory Committee, whose duties are to furnish War Department officials with such information as they may need in connection with matters of national defense pertaining to highway transportation and transportation of equipment.

The Secretary of War has requested the governor of each state to appoint a State Committee, composed of a high official of the State Highway Department, the Director of Motor Vehicles, and the Head of the State Police. The state legislatures have been asked to pass the necessary measures to give these committees an official status. Each highway and traffic engineer in the country is being called upon to play his part in the supervision of the municipal, county, or state problems that have been brought on by our preparation for the nation's defense.

The Traffic Engineering profession has already given evidence of its leadership in this movement as "America digs in."

Laurence B. Tipton

Editor, Traffic Engineering

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THE HIGHWAY ENGINEER AND NATIONAL DEFENSE

By STANLEY WILLIAMSON

EVERY person directly or indirectly connected with highways and public safety should realize thoroughly the necessity of maximum cooperation between civil and military authorities in civilian and military use of highways during the national defense emergency.

We all know that motorized armies have made highways more essential than ever before in warfare and preparedness. As the "Arsenal of Democracy," the United States has assumed a vital and tremendous service of supplying hard pressed peoples in other parts of the world with implements of war and other supplies for their sustenance.

The American Association of State Highway Officials has settled upon a policy of complete cooperation in every possible way with the Federal government in national defense efforts. The Association is participating wholeheartedly in the activities of the Highway Traffic Advisory Committee to the War Department.

As President of the Association, it has been my privilege to be designated as a member of this committee. We have extended to the War Department and the Public Roads Administration all the facilities at our disposal.

The advisory committee already is functioning as a national unit, and in every State is working through special State committees which have been created for State and local matters. These committees have been appointed by Governors of the States. Each State committee is generally composed of a Highway Department executive, the Motor Vehicle Administrator and the chief of the principal highway traffic enforcement agency.

In South Carolina, for example, our State committee is composed of the State Highway Engineer, the Director of the Motor Vehicle Division of the Highway Department and the Captain of the State Highway Patrol.

Matters relating to highways themselves, their construction, maintenance, conditions, maps and so forth are dealt with through the State Engineer. Where it is necessary for the War Department to call upon local authorities within the State such cooperation as may be necessary is arranged through the State committee, thus eliminating the necessity of the War Department having to act with too many agencies. This serves for greater efficiency, speed and understanding.

General national policies, of course, will be worked out through the national committee.

The American Association of State Highway Officials long has enjoyed successful cooperation with the Federal government, both as a national group and through the individual relations of State officials in matters relating to their particular States.

We have been extremely fortunate in having such an outstanding agency as the Public Roads Administration, and before that the Bureau of Public Roads. Through these agencies the States have always been able to work in close cooperation.

As a matter of fact, long before the Advisory Committee was established, the Public Roads Administration, through Planning Surveys and otherwise, had obtained and compiled much valuable information in respect to highways and their strategic possibilities.

Much of this information, of course, has been of a confidential nature, but it can be said that good progress has been made in compiling it. State highway officials have been happy to cooperate in this way.

Because the Public Roads Administration started this work some time ago, many highway conditions have been cleared up and there is a complete supply of information on which to base plans for the future. The President and Congress already have been given comprehensive reports, and there will be no occasion to work on any trial-and-error basis. We know just where we stand as to the advantages and weaknesses of our highways and bridges. Maps and other data are ready and all of it, of course, is available to military authorities.

We have many excellent highways in this country, but it is a well known fact that the major work of providing for the enormous traffic increases is still ahead of us. This has been vividly emphasized in a military way by the large concentrations of men and vehicles in the Army expansion program, as well as by the results of maneuvers in recent years.

In many instances roads and bridges broke down under the weight of the heavy traffic during maneuvers. Texas and other States had unfortunate experiences, but these have served to put us on guard for the future. We not only have got to have more roads and bridges, but we have got to have stronger ones.

Where possible State Highway Departments are planning for the future on the basis of military specifications for roads and bridges. It will cost more money, but we will have more permanent structures.

As an illustration of how engineering services are being called upon immediately, other than for actual construction and maintenance work, is contained in Training Circular No. 11 of the War Department, recently issued under the signature of General George C. Marshall, Chief of Staff of the United States Army.

After dealing with the immediate problems of traffic and troop movements, the War Department circular announced that calls would be made for State road maps; highway condition maps, indicating detours and construction and issued periodically; county Planning Survey maps, showing all roads, trails and prominent land marks, and State and county traffic flow maps, indicating daily traffic volumes.

These would be of more or less routine nature, but State highway officials will be prepared to offer their assistance in various other respects.

On the whole, it is accurate to report that State highway officials are eager and ready to do their part. When and if the Federal government enters upon more extensive construction and repair programs, the logical organizations to carry on the work are our State Highway Departments. There need be no fear about their readiness and their ability to do what may be required of them.

An excellent foundation for cooperative effort has been established in the Highway Traffic Advisory Committee to the War Department.

An original article by J. Stanley Williamson, Chief Highway Commissioner of S. C. and Pres. of the American Assoc. of State Highway Officials. Member Nat. Highway Traffic Advisory Committee to the War Dept.

DEFENSE-ROAD DESIGN STANDARDS

DESIGN standards for bridges and roads adequate to carry defense traffic have been outlined in detail to John M. Carmody, administrator of the Federal Works Agency, by the Public Roads Administration.

The load capacity of bridges in rural areas should conform to the recently revised standard H-15 live loading recommended by the American Association of State Highway Officials. This design loading consists of a stan-

dard truck having a total weight of 15 tons, or of lane roads equivalent to the truck-train loading included in the 1935 specifications of the A.A.S.H.O. For major intercity routes and metropolitan areas the H-20 designs are considered justified.

Bridges of H-15 loading will safely support the loads of all commonly used commercial vehicles applied in normal frequency. They will support the loads of all military equipment, other than heavy and medium tanks, without special control of the movement. Tanks will be carried safely under the following conditions:

Light (13½-ton) tanks: Two lanes may be loaded simultaneously with these tanks.

Medium (20 and 25-ton) tanks: Their movement must be controlled so that only a single file, spaced at least 40 ft. apart, follows the center-line of the bridge. There need be no speed limitation.

Heavy (55-ton) tanks: Their movement must be controlled so that no more than a single file, spaced at least 50 ft. apart, follows the center-line of the bridge. Speed should be reduced to 4 m.p.h.

Existing bridges and underpasses on two-lane roads having a horizontal clearance of less than 18 ft. should be replaced or widened as promptly as possible. New and widened bridges on two-lane roads carrying less than 600 vehicles per day should have a minimum horizontal clearance of 24 ft., with a preferred clearance of 26 ft. Two-lane roads carrying from 600 to 1,800 vehicles should have a minimum horizontal clearance of 26 ft., with a preferred clearance of 28 ft. More heavily traveled roads should have a minimum of 28 ft., with a preferred clearance of 30 ft.

If existing two-lane bridges have a horizontal clearance of less than 20 ft. they should be posted as narrow bridges. Bridges on three and four-lane roads should be replaced and widened as promptly as possible if they have less than 30 and 40 ft. respectively of horizontal clearance.

New and widened bridges on three and four-lane roads should have horizontal clearances of at least 40 and 52 ft. respectively, and preferably horizontal clearances between extreme lateral curbs 6 ft. greater than the width between the outer edges of an approach pavement or pavements designed for 12-ft. lanes. Bridges on four-lane roads having a wide central dividing strip may be built as dual bridges, each bridge providing horizontal clearance of at least 26 ft., and preferably 30 ft.

The minimum and preferred horizontal clearances for underpasses on two-lane roads are as follows: for traffic of less than 600 vehicles a day, 30 ft. minimum and preferably 40 ft.; for traffic of 600 to 1,800 vehicles, 30 ft. minimum and preferably 42 ft.; for more than 1,800 vehicles, 30 ft. minimum and preferably 44 ft.

New and widened underpasses on three and four-lane roads should have horizontal clearances at least 6 ft. and preferably 20 ft. wider than the width between outer edges of an approach pavement or pavements designed for 12-ft. lanes.

Existing bridges and underpasses having a vertical clearance of less than 12½ ft. should be heightened as promptly as possible. New and heightened bridges and underpasses should have vertical clearance of at least 14 ft., which is sufficient for the passage of all military equipment and substantially all civil vehicles. Bridges and underpasses of less than 14-ft. vertical clearance should have their minimum clearance plainly posted upon them.

All road surfaces should be dustless. All surfaces and foundations should be designed in accordance with the present practice of each state for the all-weather support of repeated appli-

cations of 9,000-lb. wheel-loads on pneumatic tires. Wheel-load is defined as half the axle load where dual wheels are used.

Existing two-lane roads having a pavement width of less than 18 ft. should be widened as promptly as possible. Two-lane roads carrying less than 600 vehicles a day should have a pavement width of 20 ft.; those carrying from 600 to 1,800 vehicles should have a pavement width of 22 ft., and those carrying more than 1,800 vehicles should have a pavement width of 24 ft. These widths are completely adequate for all anticipated military usage.

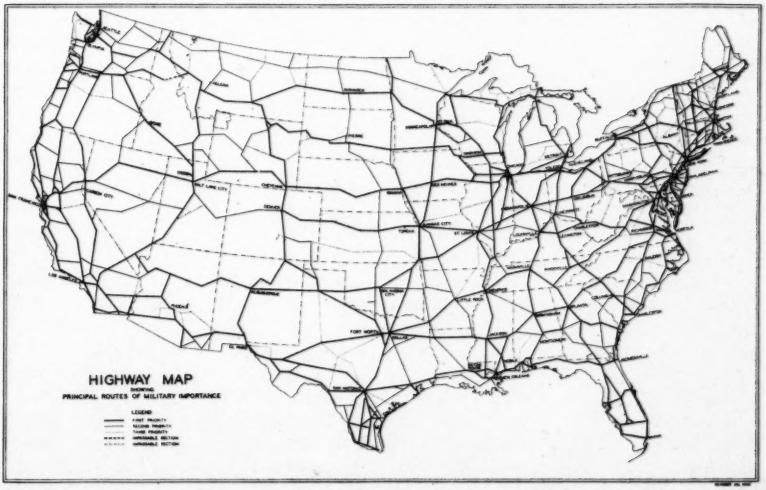
New three and four-lane pavements should be constructed to provide a width of 12 ft. per lane. It will be unnecessary to widen any serviceable existing three and four-lane pavements whose lane widths are less than this recommended standard.

Roads carrying more than 1,800 vehicles per day, and less heavily traveled roads wherever feasible, should have continuous shoulders on both sides of the pavement wide enough to permit parking. A minimum width of 8 ft. is essential for this purpose.

If continuous shoulders are not feasible on roads likely to be frequently used by convoys, shoulders of such width should be provided on sections not less than 2,000 ft. in length at intervals of not more than 4 miles. Such sections should be staggered, so as to provide space for parking on one side or the other at intervals averaging not more than 2 miles in length. This should be considered a minimum requirement on roads carrying more than 1,800 vehicles per day, and exceptions should be considered only in mountainous locations involving the heaviest grading.

At no point should shoulders be less than 4 ft. wide.

It will not be necessary to change grades more than 500 ft. long on any road otherwise adequate. Where it is necessary to construct or reconstruct roads for other reasons, it is desirable to hold maximum grades more than 500 ft. long within the limits of 6 per cent in mountainous and 4 per cent in non-mountainous terrain.



Diagrammatic map of the Strategic Network, showing route priorities, as tentatively designated by the War and Navy Departments.

It will be unnecessary to revise the curvature of any road otherwise adequate. On roads it is found necessary to construct or reconstruct, it is desirable to hold maximum curvature within the limits of 6 deg. in mountainous and 4 deg. in non-mountainous terrain.

In mountainous areas where heavy grading is required, and on low-priority routes where traffic is light, maximum curvature may be increased to 14 deg. On low-priority routes in non-mountainous areas where traffic is light, maximum curvature may be increased to 10 deg.

For improving bridges and roads in urban areas, the only portions of the foregoing rural-area standards directly applicable are those for vertical clearance of bridges and underpasses, and for the strength of pavements. The standard H-20 design loading is recommended for the extremely heavy gross loads likely to be met in such areas. The horizontal clearance of bridges, width of pavements, gradients and curvature can be determined only after considering conditions peculiar to each location.

The Public Roads Administration cautions that the foregoing standards should not be arbitrarily enforced without reference to the particular conditions surrounding each project.

Existing roads and streets conforming most closely to the main lines of the strategic network total 74,626 miles, consisting of 66,869 miles of rural highways and 7,757 miles in cities. Routes designated as of first priority total 42,422 miles, of which 29,331 miles consists of routes included in the interregional system recommended by the Public Roads Administration. Second-priority routes total 23,072 miles and third-priority routes 9,142 miles, no part of which is included in the PRA's interregional system.

An estimated 5,090 miles of the strategic network is paved less than 18 ft. wide; but on a basis of the traffic-volume requirements of design, 43,120 additional miles has inadequate width—48,210 miles in all. The extremity of inadequacy is reached on 1,037 miles of the network with existing surfaces less than 18 ft. wide that carry traffic averaging more than 1,800 vehicles per day.

The strength of existing road surfaces approaches the desirable standard more nearly than their width. Not more than 14,000 miles is considered incapable of supporting a 9,000-lb. wheel-load. Excessive curvature and inadequate sight distance are among the most common defects of existing improvements, but the most common defect is narrow shoulders.

Many state highway departments have indicated a preference for constructing wider shoulders at staggered intervals on the two sides of the road; but even so, immediate shoulder widening is reported desirable on 42,700 miles of highway.

On the rural portions of the strategic network, 16,692 structures, including 15,813 bridges and 879 underpasses, are found. Of these, 2,436 bridges have a load capacity inferior to the H-15 standard. These bridges are regularly overloaded by from as little as one-fifth of their rated capacity to (in one instance) as much as 21 times.

On two-lane sections of the rural network, planning-survey inventories show 819 bridges and underpasses with horizontal clearance of less than 18 ft.; on three-lane sections, 46 with horizontal clearances of less than 27 ft.; on four-lane sections, 35 with horizontal clearances of less than 36 ft. This makes a total of 900 structures with horizontal clearance less than the acceptable minima.

The survey shows 133 bridges on which less than the acceptable minimum vertical clearance of 12½ ft. is

provided—less than 1 per cent of the total. The number with less than 14-ft. clearance is considerably less than 5 per cent, and the number with less than 17-ft. clearance is less than 10 per cent of the total.

Many of these structures have more than one defect, and the total number of different bridges affected is less than 3,000. In addition to defective bridges that should be rebuilt or altered, however, a number of new structures should be built for various reasons. These include needed grade separations, bridges to replace fords and dips, and new bridges made necessary by desirable relocations.

The total number of bridges and underpasses in a minimum acceptable improvement of the rural network is 3,648.

An article in the April 1941 issue of Better Roads.

THE STATE POLICE AND NATIONAL DEFENSE

By DON F. STIVER

THE tragic experience of Europe in the second World War, with its refugee-choked roads impairing the effectiveness of mechanized troops, has caused the United States War Department to take drastic steps to prevent such a disaster in this nation.

The War Department has turned to six prominent civilian experts for advice on the problem of preventing traffic jams like that which contributed to the fall of France.

Thomas M. MacDonald, head of the Federal Public Roads Administration, is chairman of the new committee. L. S. Harris, executive director of the American Association of Motor Vehicle Administrators, is the secretary. Other committee members are Major Ernest W. Brown, superintendent of the Washington, D. C., police and president of the International Association of Chiefs of Police; Don F. Stiver, chairman of the State Police Section of the International Association of Chiefs of Police and director of the Indiana Department of Public Safety; A. W. Bohlen, president of the American Association of Motor Vehicle Administrators and motor vehicle commissioner of South Carolina; and J. S. Williamson, president of the American Association of State Highway Officials and chief engineer of the South Carolina Highway Department.

America's fast expanding army which has been "limbering up" at camps during the winter is expected to "take to the roads" this summer for vast maneuvers. Then long columns of trucks, tanks, and motorcycles and mobile guns will be rumbling down state highways. Troop transports in these troop movements may include as many as three thousand to four thousand vehicles at a time — whole divisions of perhaps eighteen thousand men—or even corps of several divisions may decide to cross an entire state during training moves.

The necessity of coordinating these enormous enterprises with civilian traffic movements caused the formation of state committees. These state committees consist of a highway department executive, the motor vehicle administrator and the head of the traffic enforcement unit. One of these three members, all of whom are appointed by the Governor, is the liaison member of this state highway traffic committee. The liaison officer is contacted by army unit commander when he is contemplating a movement.

State committees are now completing arrangements for the necessary coordination with local officials. The Highway Traffic Advisory Committee to the War Department, in collaboration with the War Department, work-

ed out a form containing the planning data for use of state and municipal traffic officials in preparing for military motor movements. This form contains sixteen items of information which are to be furnished to the liaison officer of the state committee as far as possible in advance of the movement.

Here is the system as it has been worked at meetings between the committees and War Department officials:

Suppose the commanding officer of the Fifth Division now in camp at Fort Custer, Michigan, should desire to use Indiana highways to move his unit to Fort Knox, Kentucky. The commander would communicate with the liaison officer of the Indiana highway traffic committee. This liaison officer would radio or telephone immediately the following information to the commander: Most practicable routes, alternate routes, points where it would be advisable to divide a column, best time to pass through certain areas, vehicle spacing and speeds most desirable for coordinating with other traffic, location and nature of unusual road conditions, and location of facilities for service and supplies. All of this information is kept up to date and read off a form prepared for the purpose. After he receives this information the army commander makes his plans in line with highway conditions and recommendations of the state committee. The liaison officer will then arrange for police escorts to meet the columns of moving army vehicles at various points to guide them through various congested spots.

Each regional committee of the State Section of the International Association of Chiefs of Police is meeting to consolidate its experience and form its battle front. The state police executives of Region I in New England met in March at Hartford, Connecticut, and other regional meetings are in the offing.

Under this new system, plans for transporting troops and supplies can be carried out in a few hours. These plans are designed not only to facilitate maneuvers, but because national and state civilian and army officials want to be prepared should vast numbers of troops have to move in a real emergency.

In almost every state the liaison officer is the chief of the state police or the highway traffic patrol and is in a position to give instant cooperation in providing police escorts in contacting municipal officials to secure their aid, and in warning the various police officials in each sector of the increase of traffic on that highway.

Traffic accidents are quite as unnecessary and undesirable in military maneuvers as they are in civilian traffic. It is the desire of the army that the drivers of its hosts of vehicles be the best available for this service. In some states the state police chief has information concerning the driving record of men now in service and in other states the motor vehicle commissioner can provide this data. Unit commanders in selecting drivers can request, on the special form provided for this information, the previous driving record of service men. In this manner they expect to weed out the incompetent and make the drivers of their mechanized units the most capable the selective process can provide.

State police departments in states where defense industries are employing thousands of men in large local centers are encountering traffic problems that dwarf their previous experience. Army cantonments also add a stream of vehicles. Merely dealing with these new traffic problems born of war industries and the selective service act overtax facilities of departments all over the country, without reference to the problems of army maneuvers previously discussed.

As a typical example of the phe-

nomenal growth of traffic problems, the construction of the greatest powder plant on earth might be given.

Last year on September 2, 1940, the countryside around Charlestown in southern Indiana made a peaceful agricultural scene. Indiana corntops were waving in the breeze that swept up the Ohio River and farmers were engaged in their fall harvesting. But over in Louisville, a group of men had arrived who were planning to change the course of history in the locality and whose activities were destined to reverberate, in literal fashion, throughout the world. They were the advance guards for the construction of the gigantic powder plant. Surveying gangs moved in, farmers harvested their last crops, materials began to arrive, construction workers poured in, the area began to assume all the aspects of a boom town.

On Monday morning a man might drive by the corner of the area, which was still a deserted cornfield, and return on Saturday to find a large brick building occupying the site. A scant six months after the first shovel of earth was turned, the seven thousand acres out-rivaled in appearance the manufacturing centers of Hammond, Gary, Whiting and East Chicago in northern Indiana.

Workers from all over the nation and as far away as the Canal Zone, flocked to the construction. On February 1, the road leading from Louisville on the south side of the river and from Jeffersonville to Charlestown, was completed. It was the customary two-lane, black-top road with reasonably wide berms. Every morning more than 25,000 workers came to work over it in four thousand automobiles and travelled it again returning to their lodgings in the evenings. Until the state police were able to send enough state troopers to care for this situation, these drivers roared over the twelve mile area between Jeffersonville and the plant, with all cars moving in the same direction, two abreast on the road itself and one each on each of the berms, or four abreast. The confusion was indescribable.

It took more than two hours for workers to cover the twelve mile section and arrive on time at 8:00 A.M. In the evening the same conditions prevailed. It became necessary to establish a state police post and detail a considerable force to deal with the critical situation. A tremendous parking lot planned to hold more than four thousand cars was built inside the plant and additional lots are being constructed with outlets on the highway at various centers. A wide overhead pedestrian walk was constructed fifteen feet above the pavement leading from the plant to a multiple track siding where four trains made their appearance every morning with from five to fifteen coaches loaded to the steps with workers.

At about six o'clock every morning the cars begin to roll from every side road into the main highway leading to the plant. It is necessary to place an officer at each point where the stream converges to let one artery flow for awhile and then to permit the other to operate. By 6:45 in the morning the cars will be traveling almost bumper to bumper as far as the eye can see. This continues until about ten minutes before eight, having lasted for almost two hours, and then a lesser flow of office workers due at 8:30 begins to appear.

At 4:30 in the afternoon a great exodus occurs. Through the efficient time-clock alleys of the plant, thousands and thousands of men pour out and filter into their cars and form a three-line caravan inside the plant, controlled by plant officers, awaiting their chance to leave. For ten minutes pedestrians have the right of way across the highway and they pour

across it to the trains by the thousands. At twenty minutes to five all pedestrians are diverted to the overpass and compelled to use it. The stream of vehicles is permitted to come out of the main gate, alternating between the lanes in the plant. It has been necessary to install a hand-operated police semaphore on the road to alternate the stream of vehicles coming from the main gate and those emerging from the north gate and doubling back down the highway to the main gate. It takes about an hour and a half to empty the parking lot and the cars emerging from it can travel only about ten or twelve miles an hour for several miles, again almost bumper to bumper. By strict enforcement they have been compelled to stay in line without attempting to pass each other over almost the entire twelve-mile stretch. Likewise the enforcement of the parking regulations has convinced all these workers that parking on the highway and the berms is not permitted. A lesser influx and outflow of traffic occurs at midnight for perhaps forty-five minutes while the night shift changes. The vehicle count on that one road has risen to about fourteen thousand vehicles daily and already two months after its completion the road is beginning to crumble. The state highway commission has found it necessary to start immediate construction of a dual lane highway to run between the plant and Jeffersonville which must be completed within 100 days to cope with the traffic.

Additional thousands of workers will be added within the next few months, additional parking areas that empty on to the road will become necessary and at each point greater traffic control will be needed. The new dual lane highway, while it will free the road from much of the congestion, will at the same time speed up the traffic, give cars an opportunity to pass each other and probably in the long run will result in more accidents that are now being caused by the limited traveling conditions. The state police will be forced to put additional officers perhaps at every few miles along the road.

These are the daily duties facing the troopers in just one county. It furnishes the troopers with more traffic business than any other five counties in the state of Indiana.

This scene is repeated in hundreds of localities over the nation and local and state police officers are being diverted from the more normal traffic pursuits into these emergency areas. The swift and safe movement of defense workers and army troops has become a major enterprise and is challenging traffic engineering and traffic enforcement to its utmost. Yet everywhere the crisis is being met with foresight and enthusiasm. It's "full speed and a clear road ahead" for preparedness and defense.

An original article by Don F. Stiver, Supt. Indiana State Police and member National Highway Traffic Advisory Committee to the War Dept.

COORDINATION OF ARMY MOTOR MOVEMENTS WITH CIVILIAN TRAFFIC

By ERNEST W. BROWN

PLANS for facilitating large-scale motor movements by units of the enlarged army and at the same time assuring a minimum of inconvenience to the motor public were shaped in March at a series of nine regional meetings of War Department representatives with members of State Highway Traffic Advisory Committees. Organized in Washington, D.C., November 13, 1940, the National Highway Traffic Advisory Committee

to the War Department, set up the machinery for designation by the governors of the various states of state sub-committees of the National Committee to cooperate in the work. In most instances the state motor vehicle commissioner, a principal executive of the state highway department, and the head of the state law enforcement unit were appointed to serve on the state committees.

Regional meetings were held in cities centrally located in the nine Corps Areas of the War Department. The first was held in Baltimore, Maryland, March 7, followed by meetings in Columbus, Ohio, March 11; Chicago, March 12; Omaha, March 14; San Francisco, March 18; Amarillo, Texas, March 21; Atlanta, Georgia, March 25; New York, March 27; and Boston, March 28. Mr. L. S. Harris, secretary of the National Comittee; Director F. M. Kerml, of the International Association of Chiefs of Police Safety Division, committee consultant, and Captain C. R. Weaver, General Staff Corps, War Department, represented the National Committee at these regional meetings.

Primary function of the state committees is to (1) aid in securing civilian driver records of men selected to be trained as military motor vehicle operators, (2) to assemble data relative to availability of commercial trucks and buses, (3) to assist in coordination of large military movements with civilian traffic movements. In the past it has frequently been necessary to contact state, county and city officials individually to complete all arrangements for troop movements, but through the coordinating method Army commanders will contact only one person in each state, and he in turn will make local arrangements. In addition, commanders of posts, camps and stations may call on state committees for technical assistance in the solution of local traffic problems within their commands. To further centralize this coordination, the National Committee has recommended that state committees be grouped into regional committees according to Corps Areas, with one of the state liaison members serving as regional contact man to facilitate planning for long movements.

The Army of 1,418,000 men, a strength to be attained by June 15, 1941, according to present plans, will require approximately 250,000 vehicles of various types—more than 17 times the number of Army vehicles in service four years ago. The effect of this extensive motorization program will be far-reaching, and in localities where there are large concentrations of troops, the traffic problem will be serious. From the regional meetings it is hoped will come working agreements between Army officers in the field and state officials which will prove mutually helpful and present solutions to all problems which may arise.

The National Highway Traffic Advisory Committee is composed of: Thomas H. MacDonald, U. S. Commissioner of Public Roads, chairman; Major Ernest W. Brown, president of the International Association of Chiefs of Police; Superintendent Don F. Stiver, Indiana State Police, chairman of the State and Provincial Section of the International Association of Chiefs of Police; J. S. Williamson, President of the American Association of State Highway Officials; and A. W. Bohlen, president, and L. S. Harris, executive secretary, American Association of Motor Vehicle Administrators. Edward J. Kelly, executive secretary, and F. M. Kreml, director of the Safety Division, International Association of Chiefs of Police, have been designated alternates for President Brown and Superintendent Stiver and also as police consultants to the Committee.

Following is list of state committees

and liaison officer for each state designated to date:

ALABAMA (Montgomery)

C. J. Sherlock, State Highway Director
John C. Curry, Commissioner of Revenue
James F. Brawner, Acting Director of Public Safety (Liaison Member and Driver License requests)

ARIZONA (Phoenix)

William Hutchins, State Highway Engineer (Chairman)
B. H. McAhren, Superintendent Motor Vehicle Department (Driver License Requests)
Horace Moore, Superintendent, Highway Patrol

CALIFORNIA (Sacramento)

James M. Carter, Director, Department of Motor Vehicles (Driver License Requests)
Larry Barrett, Chairman, California Highway Commission.
Raymond E. Cato, Chief, California State Highway Patrol (Liaison Member)

CONNECTICUT (Hartford)

Edward J. Hickey, Commissioner of State Police (Chairman and Liaison Member)
Michael A. Connor, Commissioner of Motor Vehicles, Motor Vehicle Department
William J. Cox, State Highway Commissioner

DELAWARE

W. W. Mack, Chief Engineer, State Highway Department, Dover
Geo. S. Williams, Commissioner of Motor Vehicles, Dover (Driver License Requests)
Andrew J. Kavanaugh, Superintendent of Public Safety, Wilmington
Norman R. Purnell, Superintendent, State Highway Police (Liaison Member)

DISTRICT OF COLUMBIA (Washington)

M. O. Eldridge, Department of Vehicles and Traffic (Driver License Requests)
J. N. Robertson, Department of Highways
Inspector Arthur E. Miller, Metropolitan Police Department (Liaison Member)

FLORIDA (Tallahassee)

Thomas A. Johnson, Chairman, State Road Department
Henry Driggers, Motor Vehicle Commissioner (Driver License Requests)
W. F. Reid, Director, Florida Highway Patrol (Liaison Member)

GEORGIA (Atlanta)

M. C. Bishop, Director, Division of Traffic and Safety, State Highway Department
W. L. Joiner, Motor Vehicle Division, Department of Revenue (Driver License Requests)
John E. Goodwin, Commissioner of Public Safety (Liaison Member)

IDAHO (Boise)

J. L. Balderson, Commissioner of Law Enforcement (Chairman and Driver License Requests)
Allen C. Merritt, Commissioner of Public Works
Capt. Clyde C. Courtney, Chief, Idaho State Police

ILLINOIS (Springfield)

John J. Nash, Chief Clerk, Automobile Department, State of Illinois (Driver License Requests)
Ernest Lieberman, Chief Highway Engineer
T. P. Sullivan, Superintendent, State Highway Police (Liaison Member)

INDIANA (Indianapolis)

James D. Adams, Chairman, State Highway Commission
Edward M. Stein, Commissioner, Bureau of Motor Vehicles (Driver License Requests)

Donald F. Stiver, Superintendent, State Police (Liaison Member)

IOWA

L. M. Eicher, Chairman, State Highway Commission, Ames

Mr. Karl W. Fischer, Commissioner of Public Safety, State House, Des Moines (Liaison Member and Driver License Requests)

KANSAS (Topeka)

D. J. Fair, Director, Kansas State Highway Commission

C. M. Voelker, Superintendent, Motor Vehicle Division (Driver License Requests)

Claud R. McCamment, Safety Engineer, State Highway Commission

Col. E. P. Moomau, Superintendent, Kansas State Highway Patrol(Liaison Member)

KENTUCKY (Frankfort)

William Blanton, Director, Division of Motor Transportation (Driver License Requests)

J. Lyter Donaldson, Commissioner of Highways

Jack Nelson, Chief, Highway Patrol (Liaison Member)

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W. Prescott Foster, Director of Highways

Rufus W. Fontenot, Director of Revenue

State Alford, Superintendent of State Police (Liaison Member)

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Wilson T. Ballard, Chief Engineer, State Roads Commission

Col. Beverly Ober, Superintendent of State Police (Liaison Member)

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Frank A. Goodwin, Registrar of Motor Vehicles, Public Works Building (Driver License Requests)

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M. J. Hoffman, Commissioner of Highways, 1246 University Avenue

Elden Rowe, Chief, Highway Patrol (Liaison Member)

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Frank F. Mize, Commissioner of Motor Vehicles

E. D. Kenna, Director, State Highway Department

T. P. Brady, Commissioner of Public Safety (Driver License Requests and Liaison Member)

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Earl Snell, Secretary of State of the State, Salem (Chairman and Driver License Requests)
Henry F. Cabell, Chairman, Oregon State Highway Commission, Portland
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Sigfried Unander, Executive Assistant to the Governor, Salem (Liaison Member)

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Walter Goetz, Chief of the Motor Patrol (Liaison Member)

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Lester C. Hunt, Secretary of State
Frank Kelso, Superintendent, Wyoming Highway Department
Captain H. H. H. Clark, Wyoming Highway Patrol (Liaison Member)

An original article by Ernest W. Brown, Supt. Metropolitan Police, Washington, D. C., and Pres. International Assoc. of Chiefs of Police. Mem. Nat. Highway Traffic Advisory Committee to the War Dept.

Recommend $287,000,000 for Defense Highways

John M. Carmody, federal works administrator, last month submitted to President Roosevelt a report recommending immediate expenditure through state highway departments of $287,-

000,000 on defense highways. The money would be spent on four types of work, most of it without the requirement of matching funds.

Mr. Carmody's report follows the study of defense highway needs made during the past several months by the Public Roads Administration in collaboration with the army, the navy and the National Defense Advisory Commission at the request of the president last June.

The defense-road program is divided into two parts: construction or improvement of roads primarily for defense operations, to be financed entirely by the federal government; and improvements to the strategic system, to be financed jointly by the federal government and the states under liberalized federal participation.

Four appropriations are asked immediately, as follows:

1. An appropriation for access roads to be used as connecting links to army and navy reservations, and possibly industrial establishments. Present estimates report needs of 2,830 miles to serve 192 reservations, to be completed in 1 year or less. The total estimated cost is $220,000,000, of which $150,000,000 is asked at this time. This request has been delayed, it is said, because roadbuilding operations would have interfered with construction activities at cantonments and other military reservations.

2. An appropriation of $25,000,000 for the improvement of roads used regularly in the tactical movements of the army, and to reimburse state and local governments for the cost of repairs on roads used occasionally in army maneuvers.

The foregoing two recommendations for immediate expenditure total $175,000,000 or about 61 per cent of the total request, and would not require matching state or local funds.

3. An immediate appropriation of $100,000,000 to be prorated to the states on the existing federal-aid basis, to correct the most critical deficiencies of the strategic network. The money would be available on a higher basis of federal participation than the present 50-50 ratio. This would be part of a long-range program calling for a minimum expenditure of $458,000,000 over a period of several years for improvements to the network.

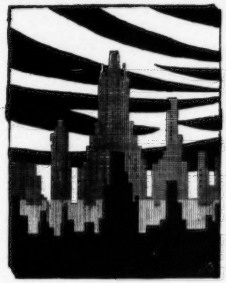
The Public Roads Administration's survey of the 75,000-mile strategic network indicates 2,436 bridges of less than H-15 loading standard, 5,090 miles of road less than 18 ft. wide, and 14,000 miles of surface incapable of supporting a 9,000-lb. wheel-load.

4. An immediate appropriation of $12,000,000 to be prorated to and matched by the states on the present 50-50 basis, which would be used for advance planning of the future development of the strategic network, including extensions of the system into and through municipalities and metropolitan areas.

The problem of reservation roads, including company streets in army cantonments and naval establishments, totaling about 1,500 miles, is not included in the recommendations for expenditures, because provision is currently being made for them by the war and navy departments.

Other recommendations ask that the federal highway act be amended to authorize addition to the federal-aid system of any roads conforming to the main lines of the strategic network; make roads and bridges on auxiliary lines of the network eligible for improvement with federal-aid secondary funds, and permit the use of federal-aid funds in payment of part of the cost of acquiring necessary right-of-way and attendant property damage.

The report also includes a survey of existing provisions for defense-road improvement and a restatement of design standards for bridges and highways.



Stop, Look and Listen

Military Loads Doom Covered Bridges

The War Department's request for bridges with a minimum H-15 load capacity on through routes has signed the death warrants of 35 picturesque old covered bridges in Washington County, Ohio.

A joint project of the Ohio Department of Highways and the Work Projects Administration to replace the wooden spans with modern structures is more than 75 per cent complete, and before long the last covered bridge of the region will disappear.

Even without defense considerations, of course, the time was past for retirement of the bridges from active service. Some of them on Ohio Route 76, which is a shortcut from Zanesville to points south along the Ohio River, were so feeble that warning signs stated: "Bridge Unsafe—School Buses Must Walk Children across Bridge." Even passenger cars traversed some bridges alone.

First Minnesota Traffic Engineering Conference

The first state-wide traffic engineering conference to be held in Minnesota and the second ever held in the United States for the purpose of scientifically studying the causes of and remedies for traffic congestion and accidents, took place from March 25th to 28th at the Center for Continuation Study of the University of Minnesota. It was so successful that at its close a unanimous resolution was passed to hold a similar conference in 1942 and annually thereafter.

Formally titled the First Minnesota Traffic Engineering Conference, the conference was jointly sponsored by the Center for Continuation Study of the University of Minnesota, the Minnesota Department of Highways, and the League of Minnesota Municipalities. Also cooperating in arranging and presenting the conference was the National Conservation Bureau, accident prevention division of the Association of Casualty and Surety Executives.

A major objective of the conference was to provide city, county, state and practising engineers with an up-to-date picture of the traffic improvements that are possible through traffic engineering, and establish the foundations for an effective and cooperative traffic engineering fraternity in the state of Minnesota. This objective was more than realized over the four days of lectures and discussions which made up the conference.

The roster of lecturers for the four days included prominent national and Minnesota traffic engineering authorities. Representing the University of Minnesota were J. M. Nolte, director of the Center of Continuation Study; E. L. Haislet, Professor of Physical Education; and F. C. Lang, Professor of Highway Engineering. Representing the Minnesota Department of Highways were M. J. Hoffman, Commissioner of Highways; Walter F. Ro-

senwald (Mem. I.T.E.), traffic engineer; J. E. P. Darrell (Assoc. I.T.E.), assistant traffic engineer; F. T. Corcoran, captain of the highway patrol; O. L. Kipp, assistant chief engineer and construction engineer; and F. C. Lang, engineer of materials and research.

The National Safety Council was represented by Earl J. Reeder (Mem. I.T.E.), chief traffic engineer. The Minnesota Highway Planning Survey was represented by W. J. Titus, public roads manager. Municipal traffic engineers who lectured were J. C. Vincent (Mem. I.T.E.), of Minneapolis and D. G. Mickle (Mem. I.T.E.) of Detroit. G. M. Shepard, chief engineer of the department of public works, city of St. Paul, also spoke.

Iowa State College was represented by R. A. Moyer, Associate Professor of Highway Engineer; A. R. Lauer, Associate Professor of Psychology and Chairman of the Governor's Traffic Safety Commission.

One of the most timely discussions of the conference was that presented by Lieutenant-Colonel J. E. Ardrey, Assistant Chief of Staff, Sixth Division, Fort Snelling, who spoke on "Traffic and National Defense."

Harold F. Hammond (Mem. I.T.E.), director of the traffic division of the National Conservation Bureau, lectured and served as conference coordinator.

Defense Work Increases Highway Traffic

How construction work in the national defense program has increased highway traffic is demonstrated by a study in Missouri on all roads within 50 miles of Fort Leonard Wood, according to C. W. Brown, chief engineer of the Missouri State Highway Department.

During 1939 the total average daily traffic at 12 points on these roads was 12,595 vehicles. The average daily count from Feb. 12 to Feb. 16 was 78,158—a gain of more than 500 per cent.

The traffic counts were made when 14,000 men were being employed in construction. Since then this number has been increased until approximately 30,000 men are employed. It is believed that U. S. Route 66 in this area has already reached and passed its traffic capacity. Improvements on connecting roads, a grade separation and divided-lane construction on U. S. Route 66 are planned.

Parking Lanes for Military Traffic

West Virginia, with WPA workers, will start construction on a system of parking lanes for motorized military trains along 342 mi. of strategic highways.

Along the roadways half-mile lanes will be built on alternate sides at 2-mi. intervals; they will be 10 ft. wide on knapped stone base 10 in. thick with bituminous surface treatment.

The State of West Virginia will contribute $460,000 and the WPA will supply $1,700,000 of the cost.

Army Camps Brings Prosperity, Problems to Louisiana City

Army camps and defense industries may bring "boom town" prosperity to many communities, but experiences of one Louisiana city show this is accompanied by mounting problems involving municipal services and facilities for city officials to solve.

The Louisiana city is Alexandria, surrounded by training camps containing 125,000 soldiers. In addition, the city's normal population of 27,000 has been swelled by thousands of workmen completing construction of two of the camps and enlarging the permanent Camp Beauregard.

In attempting to meet demands on municipal services, Alexandria's mayor

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says "What the army wants, we want," according to information today to the American Municipal Association from the Louisiana State Conference of Mayors and Municipal Officials.

To maintain order, the city increased its police force from a normal staff of 25 men to 40, and added seven squad cars and several motorcycles. It is the camp-follower and not the soldier who is a source of trouble, and police and health authorities are collaborating in rounding up prostitutes for examination. Hundreds of prostitutes and other undesirables have been forced to leave town.

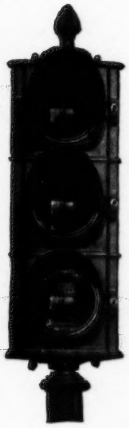
City auditoriums and school buildings have been placed at the disposal of army officers as recreational centers, and churches and other organizations have cooperated. Plans are underway to build several recreational centers at city expense.

Surfaced streets have been cut through by traffic, resurfaced, and cut through again. City, parish and state face the job of widening streets and roads. To meet traffic problems, one-way streets were designated, traffic lights added, and new restrictions placed on parking. State and military police work with city officials in handling problems of patrol and traffic regulation.

For fire protection, the city put a water pumper truck at the disposal of Camp Beauregard. The crew of men handling garbage has been doubled and the city disposal plant handles without charge most of the waste of one of the camps.

In November, 1939, building per-

ELECTRIC SIGNALS



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mits in the city called for $31,000 of new construction. In November, 1940, building permits amounted to $73,000, and in January, 1941, to $216,000. Of the last sum $135,000 was for dwelling houses and apartments. The city is now pushing for federal housing assistance in the form of a project for 1,250 housing units.

Taxes have not been increased, and the city-owned utilities apparently have borne the cost. City-owned motor buses carry capacity loads. New water connections are made daily and old users are taking greater volume. Demands for light and gas have increased at equal or faster pace. Two of the army camps purchase all their gas from the city plant.

Increased demands for service have called for an increase in plant facilities. The most important outlay was $315,000 spent in bringing electric plant equipment up to date and enlarging its capacity.

Defense Traffic Overloads Seattle Street System

Traffic in Seattle, Wash., has become so heavy due to unprecedented industrial activity of the city's many plants working on defense orders that industrial, labor and municipal officials of the city last week voted to ask the Boeing Aircraft Co. and two shipbuilding firms to change the hours of their shifts, as the first step in an extensive "staggering" of workers' hours to relieve traffic congestion.

"It is becoming increasingly apparent that all the city's downtown and industrial working people cannot use the city's key streets at the same time," said Mayor John E. Carroll.

The three firms have been asked to alter their afternoon change of shift, making it 3 o'clock and 3:30 instead of 4 o'clock. It is indicated that business men in the central business district may be asked to change working hours of their employees.

Two arterials in the central business district are reported to be carrying 30 to 50 percent more traffic than a year ago. Present bus facilities are declared inadequate to carry both industrial and business traffic at peak hours.

Harbor Island, site of the shipyards, may be reached by automobile, but by a circuitous route with a serious traffic bottleneck, and it is anticipated that extra ferries will be required to supplement small craft now in use.

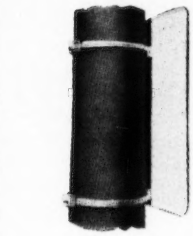
Study Shows 72 Per Cent Increase in Use of Parking Meters by American Cities

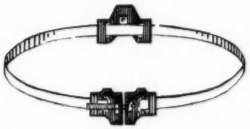
A 72 per cent increase in the use of parking meters by American cities since January 1, 1940, was reported today by the International City Managers' Association, which said 251 municipalities now use meters to regulate parking in congested areas as compared to 146 in January of last year.

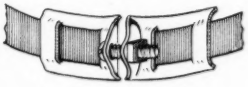
Although the meters have been in use for only five years — Oklahoma City made the original installation in 1935—they now are used by half the 78 cities between 100,000 and 500,000 population, and by a third of the cities in the 50-100,000 population bracket.

According to the report, to be published soon in the Association's 1941 Municipal Year Book, 150 of the cities obtained $475,000 in revenue from their parking meters during the month of October, 1940—considered an average month by the Association. On the basis of this, approximately $5,500,000 in revenue was obtained from the meters by the 150 cities in 1940.

Since Oklahoma City, Dallas and El Paso installed parking meters in 1935, their use has grown rapidly. Although a few cities in the study did not report their date of meter adoption, 17 cities installed them in 1936, 29 cities in 1937, 35 in 1938, 55 in 1939, 77 in 1940 and at least 28 by March 1, 1941. Meters have







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been abandoned by 24 cities and reinstalled by four of the communities —Topeka, Kan., Bristol, Va., and Lubbock and Tyler, Tex. All but 28 of the cities are of more than 10,000 population.

Automatic meters are used by 118 cities, manual meters by 117 cities, and both types by 10 cities.

A major development during 1940 was increased use of the penny meter, now in operation in 89 cities, the Association said. Meters in 14 of the cities take pennies only, in the other 75, both pennies and nickels. Practically all the rest take nickels only, although meters in Asbury Park and Atlantic City, N. J., take nickels and quarters. A few meters take dimes. Penny meters occasionally permit parking for 12, 15 or 18 minutes per penny, and a motorist usually may deposit up to five pennies.

That parking meters, besides relieving congestion, are an important source of revenue is shown by the fact that the 150 cities reporting revenue figures obtained an average of $3,166 in October, 1940. Size of revenue figures vary, of course, with the number of meters in use and variance of congestion problems to be solved. High revenue figures for October, 1940, include those of Houston, Tex. —$22,215 from 3,680 meters; Cleveland—$21,070 from 2,314 meters; Buffalo—$11,041 from 1,099 meters; and Oklahoma City—$6,890 from 700 meters.

National Defense Moves Into San Louis Obispo County, Calif.

National defense has moved into San Louis Obispo county in California, and two of the county's communities — San Louis Obispo and Paso Robles—are feeling the effects of the "big push" on municipal services be-

cause of enormous increases in population.

Already 5,800 men employed in construction of an army camp four miles away have turned San Louis Obispo into a bustling little city where demands on housing, sewage disposal and recreation facilities daily are becoming more acute. The situation in Paso Robles, 11 miles away from another camp under construction, parallels its larger neighboring city.

And while wrestling with present problems, officials of the two cities bear in mind that by mid-summer, when the camps are completed, 50,000 troops will be stationed in the county —20,000 in the camp near San Luis Obispo and 30,000 in the Paso Robles encampment.

In drawing a picture of San Luis Obispo as a defense boom town, the American Municipal Association said the city's normal population of 8,881 has almost doubled since the defense program got under way. Hotels, rooming houses and trailer camps are overflowing; more than 100 new homes under construction are being rented or purchased almost before the plaster is dry. Rents are soaring despite efforts of city officials, the Chamber of Commerce and merchants and private citizens. Three more policemen were added to the force within a period of weeks.

The San Luis Obispo defense area council, headed by the mayor of the city, so far has confined itself to problems arising from construction and opening of the nearby army camp.

The city will vote this month on a proposed five-cent tax to provide mass recreation facilities. The city council has denied several applications for taxi dance halls, but is encouraging private capital to invest in bowling alleys, a skating rink and tennis and badminton courts. School authorities plan installation of additional lighting at school tennis courts and the football field. Churches are being asked to hold activity programs for soldiers who are members of their denominations.

The owner of the civic auditorium is remodeling the building to serve as an amusement center, with a dance floor and restaurant, and with one wing set aside as a meeting place and information center for visitors and soldiers. Six oil companies have agreed to keep their station restrooms open to the soldiers, and the city is installing additional public toilet facilities in the city hall.

A new sewage disposal plant is the city's most urgent public works need. It would cost an estimated $60,000. The mayor says the city is recognizing its responsibilities by appropriating all current revenue for needed public works and increased police and fire protection, and is digging into reserves, particularly for water system extensions.

"But," he said, "we will not bond ourselves for any public works projects which are necessary only for this emergency, such as low-rent housing or a new sewage system and treatment plant, and be left with white elephants for which we must keep paying for 30 or 40 years—probably long after they are needed.

San Luis Obispo closed up its red light district more than a year ago, and the local defense council has set up a committee headed by the county health officer to work out methods to protect military personnel from venereal disease.

Other problems include maintenance for streets, which are taking a severe pounding; more stringent milk pasteurization regulations; and improvement of the present water purification methods and equipment — the latter two steps suggested by the U. S. Health Service. The city desires also

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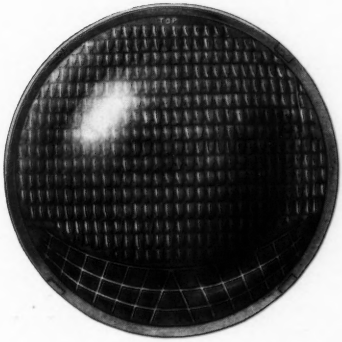

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In Paso Robles, which has a normal population of 3,045, a $60,000 bond issue was voted by the school district to provide increased facilities to meet the emergency. In two months the average daily school attendance increased by 273 students.

The city water system was modernized two years ago and the present water supply is deemed ample for the doubled population. The sewage system and disposal plant have proved adequate so far. If enlargements are required, however, the mayor says the city will need federal assistance.

As in San Luis Obispo, Paso Robles added to its police department personnel to meet increased demands.

Looking Ahead

July 22-25—Philadelphia, Pa. Convention of the Pennsylvania Chiefs of Police Association. Sec., F. B. Titus, Landsdowne, Pa.

August 18-21—Buffalo, N. Y. International Association of Chiefs of Police Convention. Exec. Sec., Edward J. Kelly, 918 F St., N.W., Washington, D. C.

October 6-10—Chicago, Ill. National Safety Council. Managing Director, W. H. Cameron, 20 North Wacker Drive, Chicago, Illinois.

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Charles William Prisk
Residence Address: 4322 North 4th Street, Arlington, Virginia
Business Address: U. S. Public Roads Administration, Washington, D. C. (Assistant Highway Engineer)

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National Roster of Scientific and Specialized Personnel

Members of the Institute of Traffic Engineers have received during the past month, a traffic engineering check list sent out by the National Resources Planning Board. This check list for members of the I.T.E. was developed by a special committee set up by the Institute, and indicates the importance that the national government is placing on the profession of Traffic Engineering.

Mr. James C. O'Brien, executive officer of the National Roster, has requested the names and addresses of the officers of the Institute in order that they may be used as consultants in determining the qualifications of persons selected from the Traffic Engineering profession for helping with problems for our nation's defense.